

Looseleaf No. 89

THE GIRAFFE

by

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Raymond Foundation



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MUSEUM STORIES

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THE GIRAFFE

Giraffes are found only in Africa, and even there they have been killed in such large numbers by the hunters that they are becoming scarce. A million years ago they lived in southern Europe and much of southern Asia. Fossil bones of the giraffe have been found in Greece, Persia, and China.



The reticulated giraffe

In the earliest days of Egyptian history the giraffe probably lived in the jungles of that country. After it had disappeared from Egypt tame specimens were often sent there from the south. In later times giraffes were sent to Rome, where they marched in triumphal processions and were shown in the circus games. During the Christian era giraffes were sent at various times by Arab traders to Europe, as well as to Persia, India, and China.

People have always regarded giraffes with great interest, just as we do when we see them in circuses and zoological gardens. The great interest in the animal is due, in part, to its fantastic form. It may be as much as eighteen feet tall. Its body, however, is short, and its back slopes gradually downward from the neck. Its front legs are not as much longer than its hind legs as they appear to be (about seven inches). It is so seldom heard to utter sounds that many people believe it to be voiceless.

At short distances the brilliant reddish brown and white markings make the animals very noticeable, although from a distance giraffes are said to be difficult to distinguish when standing quietly among tall trees. In different parts of Africa the coloring of giraffes varies slightly as does the shape of the reddish brown markings. The coloring is in the form of spots which may be almost round or very irregular in shape. One variety, known as the reticulated giraffe, is named after the network arrangement of the markings.

The horns, which may be present in both sexes, or only in the males, are usually two in number and located on the top of the head. A third, shorter horn, if present, is in the middle of the forehead. In some instances an additional pair of poorly developed horns grows at the rear of the skull. The horns are very short and they are usually covered with skin.

The great height of the giraffe is an advantage to it when it is feeding, for it lives almost entirely on the leaves and shoots of trees and shrubs. The long, flexible tongue aided by the protruding lips is used for gathering the food. The thick skin of the tongue and the dense velvety hair on the lips are protections against thorn pricks. As an additional protection against thorn pricks and blowing sand, the giraffe, like the camel, is able to close its nostrils tightly at will.

The long front legs and neck of a giraffe make it difficult for the animal to reach the ground; to do so it must spread its front legs far apart. This it rarely does, however, for giraffes do not eat from the ground, and they seldom drink. Some live in parts of Africa where water is not to be found; in fact, the Bushmen believe that giraffes do not drink at all.

In the open brush country they associate in herds numbering from six or seven to as many as forty or fifty. Because of their great height, keen sight, and well-developed sense of smell, they are difficult to approach. At a sign of danger they gallop away; their only other gait is a walk.

When a giraffe is fleeing from danger, it can go through dense scrub jungles, for its thick skin protects it from the thorns. The tough hide, which is about one inch in thickness, is extensively used for whips by the Boers and for sandals by the natives. The long hairs from the tails are much in demand for ornaments, and the meat is a very desirable food. As a consequence many giraffes are being killed and in regions where they are not protected, they are becoming scarcer year by year.

NOTE: The African Water-Hole group in Hall 22 contains five reticulated giraffes. In Hall 19 is the skeleton of a giraffe. In the South Gallery on the second floor there is a Chinese painting of a giraffe, made in the year 1485.

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Looseleaf No. 90

ORCHIDS

by

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Raymond Foundation

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CHICAGO
NATURAL
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ORCHIDS



The Star of Bethlehem, an orchid of Madagascar (Case 802, Hall 29)

When one thinks of orchids, he may be reminded of florist shops and party corsages and large, lavender, tropical flowers. But a true orchid-lover does not need to visit either a greenhouse or the tropics in order to see orchids growing, because in almost any forested section of the United States he may go into the woods or meadows near his home and find some species of orchids growing wild. Unless they have been exterminated by wildflower-picking vandals, the lady's-slipper, the snake-mouth, the white or purple fringed orchid, and the rattlesnake plantain are some of the members of the orchid family that grow wild in the United States. The lady's-slippers are just as showy and handsome as most of the finest tropical orchids.

Orchids are found in almost all parts of the world—the Americas, Africa, Asia, Australia, and the East Indies. Contrary to a

popular belief, only a few orchids have large blossoms and certainly not all of them are some shade of lavender. There are orchids that are white, yellow, scarlet, or many intermediate shades, and very many are brown or even green.

Some orchids are very showy, others quite inconspicuous, and some may not even be recognized by the amateur as actually belonging to this family of plants. Some orchids grow in cool, temperate climates; some in warm, humid, tropical regions; others even in the arctic. Certain orchids grow in the ground and receive nourishment from the soil. We call them "terrestrial." Others are tree-inhabiting (epiphytic), which means that they grow upon the branches of trees, receiving their food not from the trees themselves but from the air and wind-blown dust by means

of long, aerial roots. A few orchids are said to be saprophytic, for they feed upon decaying vegetation. Orchids are never parasites; that is, they never feed upon other living plants.

The flowers of orchids have three petal-like outer parts and three inner ones. The parts are so unlike in size and shape that the flowers are usually very irregular, for one of the three petals is often quite different in shape and size from the other two. This petal is called the "lip." It may extend downward like a long, flat ribbon, or it may spread out like a broad fan; sometimes the edges curl inward in a tube-like structure; in other species the lip forms a balloon-like sac. As a rule, the lip is the most beautifully colored part of the blossom. Some orchids have a very heavy perfume; others are but faintly scented; and some even have an unpleasant odor. Orchid seeds are very, very tiny; 30,000 of them would weigh only as much as a single grain of wheat. One seed pod sometimes contains a million seeds or more.

Orchid-growing began in England in about the eighteenth century, but was not practiced commonly in the United States until after the Civil War. The tropical orchids first introduced into Europe came from Venezuela, Colombia, and the East Indies. Tropical orchid plants grow from six to ten years before blooming, but they live and bloom indefinitely. In greenhouses they are planted in flower pots or, occasionally, in individual wicker baskets suspended from the roof of the greenhouse. When placed in a flower pot the plant is set as close to the side of the pot as possible because orchids have a characteristic way of growing across the pot, a habit which necessitates their being transplanted every two years.

Of the 15,000 species of orchids, the only one which has any economic importance as food is vanilla. It grows wild in most parts of tropical America, but the commercial supply is obtained principally from Mexico, Tahiti, and the East Indies. Vanilla flavoring is obtained from the seed pods of this plant.

In the United States, tropical orchids are highly valued, but in countries where they grow wild they are not greatly prized, and in Brazil there is a superstition that to have an orchid, even one growing in the courtyard, is bad luck and may bring illness or death to the owner.

Some orchids are very freakish in shape. One looks exactly like a butterfly, even appearing to have antennae.

In Chicago, orchids are grown in the conservatories in Garfield Park and Lincoln Park.

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Looseleaf No. 91

MOUNTAIN BARRIERS

by

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Raymond Foundation

MUSEUM STORIES



CHICAGO
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March 18, 1944

MOUNTAIN BARRIERS

When the early settlers came to this country from Europe, they established themselves along the east coast because, weary from their long journey, this land which they first saw looked habitable and they found the soil good for farming. As more and more immigrants moved to the New World and the eastern areas became crowded, many descendants of the original settlers pushed westward, perhaps for several reasons: some because they were restless, some hoping to find wealth farther inland, and some simply because they disliked living so close to other people.

To the west these pioneers found their way blocked by forest-covered mountains—the Appalachians—and many of them settled



Folded mountains

at the foot of these mountains; but the bravest and most adventurous, men like Daniel Boone, sought valleys and gaps through which they could be admitted to the flat lands beyond. The blazing of these trails was the first step toward the colonizing of the central states.

Geologists call the Appalachian Mountains folded mountains because they are huge folds or “wrinkles” in the earth’s crust. Ages ago when the earth was much newer there were no Appalachian Mountains. Instead, a narrow and shallow sea covered the regions where these mountains stand today. Later, but still a very long time ago, horizontal pressure within the earth’s crust caused the land to be raised in a series of gigantic, parallel folds. These folds, whose surface has been greatly changed since, are the Appalachian Mountains as we know them today.

The discovery of gold in California caused a great westward migration. Before this “rush” the settlers of the central states had avoided land travel over the Rocky Mountains to the west because of the hardships of the journey. Scouts and explorers had told them that the Rocky Mountains were much higher and much wider than any range in the east, and so greatly did they fear this route that for many years travelers from the central and eastern states who were on their way to California and Oregon went all the way around South America by boat rather than brave the Rocky Mountains. For this reason the Rocky Mountains

retarded the colonization of the western states, but visions of wealth and a desire to "get rich quick" helped overcome the mountain barriers.

Those rugged individualists who attempted to get to the west by land and who passed through Montana, Colorado and Wyoming, encountered a second type of mountain—the dome mountain, formed of materials inside the earth's crust. Certain sections of the crust contain great pools or reservoirs of igneous fluid called magma. This magma is very hot and usually contains a great many gases. Sometimes the magma dissolves the rock above it or pushes through a crack in the earth's crust and spreads out over the surface of the ground. When it does this it is called an active volcano. In some instances the magma doesn't reach the surface but instead pushes its way between sedimentary rocks, or if it is forced upward with enough pressure it may raise beds of rock instead of passing through them. After a long time the magma will cool deep beneath the overlying rock layers and will harden. Mountains of this type are also known as blister mountains. The Black Hills of South Dakota and the Green Mountains of Wyoming are dome or blister mountains.

In those regions where the magma reaches the surface and the pressure of the gases it contains is very great, it is erupted high into the air and when it falls back to earth a volcanic cone or mountain is built up. Sometimes it takes several eruptions, perhaps years apart, to build a volcanic mountain. Today, none of the volcanoes in the United States are erupting, but once they were active. Mount Lassen in California is the most recent active volcano in this country, having erupted in 1914 and 1915.

Mountains, no matter what type, have greatly influenced man's life. Not only have they acted as natural barriers to travel, but as cultural barriers as well, with the result that often new and easier methods of doing things have failed to reach mountain dwellers. But the effect of mountains on man is not all bad. In some cases mountains are accepted as natural boundary lines which save man the trouble of making his own. Many mountains are sources of mineral wealth and the industries of many of the eastern states depend largely upon the valuable water power of mountain streams.

NOTE: Types of mountains and ways that mountains are formed are illustrated with charts and models in Hall 35.

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Looseleaf No. 92

GLACIERS

by

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Raymond Foundation

MUSEUM STORIES



CHICAGO
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GLACIERS

Glaciers are usually thought of as belonging to cold, polar regions alone, when in reality they exist in every zone, including the tropics. This is possible because of the presence of lofty mountains upon which snow fields can form. In temperate zones, also, glaciers are found on high ranges; they are especially abundant on those against which moisture-laden winds blow, such as, for example, the Cascade Range in the western United States.

There is a certain height on a mountain side called the snow line, below which glaciers do not form. Near the equator, where



A mountain glacier

the air close to the ground is warm, the snow line is from 15,000 to 19,000 feet above the sea, while in polar regions it is almost at sea level. Above the snow line only a fraction of the fallen snow melts from one winter to the next. This means that there is an accumulation of snow and ice that keeps increasing as time goes on. When the ice has accumulated to a considerable depth, it tends to spread, as does a mass of stiff molasses candy; if it rests on an inclined surface it will move down the slope. When the ice in an ice field begins to move, it is called a glacier.

Not all glaciers travel at the same rate of speed; some move only a few inches a year, others as much as thirty feet a day. The latter figure is exceptional, however, and applies only to a very

large and thick glacier. The fastest glacier of all is one that moves down the rocky coast of Greenland at a speed ranging from fifty to seventy feet a day!

The center of a glacier moves faster than its sides, and the top faster than the bottom, because of the friction of the sides and bottom against the ground over which the glacier is traveling. As the glacier moves, stones are frequently picked up and carried along. These stones often scratch the bedrock over which the glacier moves, and the scratches are called glacial striations. Many of the rocks in the Great Lakes region show striations. This is one way we have of knowing that glaciers once covered not only the area on which Chicago now stands, but many of the eastern and central states as well. This, of course, was a long time before there was a city of Chicago and probably even before there were any people in the United States. This cold part of the earth's history, known as the Ice Age, ended about 25,000 years ago.

The coming of the glaciers was a very important event to the people who now live around the Great Lakes because the glaciers formed these lakes. Let us imagine a great ice sheet about a mile thick and many miles long moving down from the north, centuries ago. As it approached the region where we find the Great Lakes today, the glacier deepened and extended valleys down which it traveled. Later, when the climate became warmer and the ice sheet melted, the valleys were dammed up by masses of rock and dirt, the water from the melting glacier filled the cavities, and the Great Lakes were formed. When the ice disappeared from the Chicago region it left tons and tons of dirt and rock material which it brought from the north. Such material is known as till. Many of the hills around Chicago are composed of till and because of their origin and shape are called moraines.

When a glacier reaches the sea and enters the water, large pieces of the ice sheet are apt to break off and float away as icebergs. This frequently presents a hazard to ships. The part of the iceberg seen above the water is only about one-eighth or one-ninth of the entire berg. Fortunately, many of the icebergs, when once afloat, melt in the warmer water, but occasionally a huge iceberg will travel 2,000 miles or more before disappearing.

NOTE: In Hall 35 there are a diorama showing a mountain glacier, exhibits of striated rocks, and physical maps of the glaciation of the Chicago region.

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Looseleaf No. 93

THE COMMON OCTOPUS

by

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MUSEUM STORIES

CHICAGO
NATURAL
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THE COMMON OCTOPUS

The octopuses and squids, with highly developed eyes, and often gigantic in size, are the aristocrats among the mollusks, as compared with their relatives, the clams, the oysters and the snails.



The octopus in its den

The ancestors of the modern octopus probably had elaborate shells like that of the nautilus; but with the development of active and predatory habits, the octopus and its relatives were able to dispense with the protec-

tive shell. Indeed, these bold creatures, when full grown, have few serious enemies except man.

The common octopus of temperate waters in the North Atlantic is the best known of these creatures. It is found in shallow waters on both the European and American coasts. As its name implies, the octopus has eight arms. These are connected with a somewhat shapeless central body, with a pair of large eyes at the top. Water is sucked in and forced out of the body by the expansion and contraction of a muscular layer called the mantle. This current of water, entering at a collar-like slit, passes over the gills, and is the octopus' means of breathing. The outgoing water passes through a tube called the siphon. The arms are used to catch passing crabs or fishes. The captured prey is passed to the mouth at the center of the body, where the arms meet, and the victim is crushed by a strong horny beak.

The octopus can creep over the sea-bottom, usually moving side-wise, with the body elevated above the arms and the eyes at the top. It can also leave the bottom and swim freely in the water, the sac-like body foremost and the arms trailing like a stream-lined mop; this swimming is accomplished by the sharp expulsion of the water from the siphon, and steering is accomplished by pointing the siphon in different directions. The arms, which are connected at the base by a broad web, are also used in swimming.

On the bottom, the octopus habitually retreats into crevices in rocks. If it lives among loose stones, it gathers them together to form an artificial den. The octopus may live in such a home for some time, as will be shown by the piled-up shells of its victims. The rocky retreats of the octopus are its breeding places.

The eggs are small oval granules (like grains of rice) and are attached to a central stalk. The mother octopus deposits several such stalks of eggs in her den and broods them for thirty or forty days, keeping the water in motion over them by movement of her body and by jets of water from her siphons. The number of eggs produced by a large octopus at a single laying may be 40,000. When the eggs hatch, the young swim away, fully formed miniature octopuses.

Octopuses are remarkable for their powers of color change, which enable them to conceal themselves on various kinds of ocean bottom. When the octopus is disturbed, its colors may change with startling rapidity, apparently as an emotional reaction, certainly without any connection with concealment.

The device of the "smoke-screen" may be said to have been invented by the octopuses and their relatives. An inky fluid is discharged into the mantle cavity from a special gland, and when this is spread in the water behind the swimming octopus, or in front of its den, it effectively hides the animal and must confuse any pursuing enemy.

Exaggerated sea tales tell of ferocious attacks of the octopus upon man and his boats. Though the arms of the juvenile common octopus have a spread of only a few inches, in a large adult they



The octopus swimming

may cover an area six feet in diameter, and such a monster could possibly become dangerous to a human being if he came within range of the tentacles.

Octopuses are much more likely to be sought by man than to attack him. In many parts of the world, and especially in Italy, the octopus is considered a staple food. They may be found on the shore at low tide or they may be captured with three-pronged spears and strung in bundles for market. They have the habit of crawling into hollows. In Japan, octopuses living in deeper water are often captured by lowering strings of crockery bowls to the proper depth. After several hours, the bowls are hauled up, each bowl, as a rule, containing a luckless octopus. Baked, boiled, fried, dried, and pickled, the octopus may appear as a delicacy served at famous restaurants.

NOTE: You may see examples of the octopus in Hall M and in the Bahama Case in Hall O.

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Looseleaf No. 94

COFFEE, A GIFT
FROM THE OLD WORLD

by

MIRIAM WOOD
Raymond Foundation

MUSEUM STORIES

CHICAGO
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COFFEE, A GIFT FROM THE OLD WORLD

The true story of how, where, and when coffee was first discovered is hidden among the mysteries of the East. There are numberless legends and fables, all containing, perhaps, a little truth. One of the oft-told ones recounts the story of the Abyssinian monastery whose herdsman complained to the abbot that



*Branch of coffee tree,
with berries and
leaves*

the goats were too frisky; they danced about, they would not sleep, and all because they had eaten the red berries from a small tree growing near-by. So the abbot decided to make a beverage from the berries and try it himself. He found that he, too, could not sleep, so he promptly fed it to his monks, in the pious hope of keeping them awake during evening prayers. According to the story, the news of the "wakeful monastery" spread rapidly and the wonderful berries were sought throughout the kingdom.

The first authentic mention of the coffee tree, its fruit and uses was made by an Arabian physician in the ninth century A.D. The Arabians became so jealous of their new drink that the berries were not allowed to leave the country until they had been placed in boiling water to destroy their powers of further growth. Therefore, it was years before the tree was cultivated outside of Arabia and Abyssinia. Probably some of the pilgrims managed to carry a few of the good beans to India where, some time after 1600, the trees were being cultivated.

So many people in Arabia enjoyed the beverage brewed from the coffee beans that the Mohammedans began to disapprove of it. Such numbers came to the coffee houses to drink coffee and discuss the affairs of the day that these gatherings were considered dangerous for the government, and coffee drinking was forbidden. Nevertheless it became more popular and finally the law was withdrawn.

As the years passed and the precious berries were taken from country to country, many such difficulties arose. Physicians argued as to whether it was a healthful drink. Religious groups

scorned it and called it liquor. In Italy, France, England and Germany the people learned to like coffee and public houses were erected where coffee was served. People thronged there and as they sipped the "friendly drink" they exchanged ideas. The houses gradually became meeting places where all classes could go and be free to enter. Intelligent people enjoyed the social life of the houses; men who could not afford to buy the daily papers came there to read and learn the news; famous people gathered there and others crowded about to see them and hear them speak.

Gradually the drink became established in the homes, but even so, the coffee houses continued to be popular for many years before their importance as meeting places dwindled.

Today, the once rare coffee tree is so widely cultivated in most tropical countries that more coffee has been produced than could be sold at a profit. On the Brazilian plantations, the most extensive in existence, there are miles and miles of hills covered entirely with coffee trees. It is difficult to get people to work by the day when needed on these plantations and so the owners encourage families from Italy and Spain to settle there and work. Each family is given a small plot of land for household uses and the entire family works on the plantation a certain part of the time.

Coffee as a beverage has spread over the world, and even though the same type of coffee is used practically everywhere, still the ways in which it is used and the customs and manners associated with it are often varied. In comparison with our modern coffee drinking the oriental customs are quaint. In some places it is almost a ceremony; the green coffee beans are roasted, ground and brewed before you as you watch and wait. In old Arabia where coffee has been known and used so long, it is even a part of business; shopkeepers serve coffee to their customers before starting to argue. In their own homes, the Arabs are noted for hospitality, the symbol of which is a drink of coffee.

NOTE: In Hall 25 you may see an exhibit showing the coffee branch, blossoms, berries and beans as well as pictures illustrating the production and preparation of coffee.

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Looseleaf No. 95

THE KOALA,
THE REAL TEDDY BEAR

by

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Raymond Foundation

MUSEUM STORIES

CHICAGO
NATURAL
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Series XLII, No. 7

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THE KOALA, THE REAL TEDDY BEAR



*A mother koala carrying her young
(Hall 15)*

Should you ask a native Australian which of the pouched animals of his famous land is his favorite, he doubtless would say, "the koala." Every one there loves the roly-poly inhabitants of the eucalyptus trees, just as small children in our own land like their toy teddy bears, which are made to look like the koalas. The real koala has the same small, rounded body, short arms and legs held akimbo, bright, wondering eyes, and queer, black nose, but it is not a bear. The koala belongs to the "marsupials," the group to which belong the kangaroos, wombats, phalangers, and Tasmanian devils. These all have outside pockets for the feeding and protection of the young.

When the "Joey" or baby koala is born, it is less than an inch long and has no hair on its body. Using its long, strong, pointed claws, it works its way up through its mother's fur and into the pouch, where it stays for several months. During that time, it grows a coat of short, thick, woolly fur.

After leaving the pouch, the youngster spends much of its time lying in its mother's arms, much as a human baby does, except that it has to hang on tightly. The mother cannot clasp it, as her own arms are needed for climbing about in the tree and pulling down the tender leaf tips on which she feeds. Should the baby become alarmed, it quickly swings about onto its mother's back and up the tree they go, far away from danger. Koalas, especially the old males, are fond of sitting in the bare limbs at the very tops of the trees. Sometimes the forests ring with the hoarse calls of the animals, but usually they are silent.

While the eucalyptus trees are the homes of the koalas, they often come down and walk about on the ground. In descending

the trees, they scramble down backward, never glancing around once to see where they are going. On the ground they are rather awkward because of the peculiar formation of their fingers and toes. Each hand has five fingers. The first two are together, then comes a space, then three more fingers, held close. Thus we might say that the koala has two thumbs on each hand, as the first two fingers stand out at an angle as does our own thumb. On each foot are four toes arranged in groups of twos, with some space between the groups. This arrangement makes it possible for the animals to clasp a limb or tree trunk with great security. Like man and the apes, koalas can hold their arms above their heads or out from their bodies.

Their favorite food is the oily leaf tip of the manna gum, a kind of eucalyptus tree with long drooping leaves that contain sugar. As far as known, koalas will eat very few kinds of eucalyptus leaves. That is the reason that it is almost impossible to keep them alive away from their homeland. Occasionally, a koala has been seen to eat bark and sphagnum moss. It is thought that these are used as medicine. In order to secure all the fat, sugar, and meaty substance needed to keep them healthy, the koalas take into their stomachs great quantities of the leaf tips. To care for this mass, they have been provided with the most highly developed appendix known. We have a very small appendix and yet what trouble it can cause! The koala appendix is from six to eight feet long and is in constant use.

While the koalas eat a tremendous amount of food, they do not drink. In fact, the name "koala," given to these attractive little marsupials by the early natives of Australia, means "nothing to drink," or "I do not drink." The moisture needed must be found in the juicy leaf tips. As they gather these during the night, perhaps the dew provides some of it. People who have been fortunate enough to have a pet koala are always amused to see it when given water, for it tries to chew it.

Koalas make delightful pets, following their owners about just as puppies do. When hurt they cry like babies and want to be taken up and fondled. Due to the fact that so few are left from the millions that formerly lived in Australia, preserves have been established where they are protected. It is now illegal to secure one without a permit from the government.

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Looseleaf No. 96

WATERFALLS

by

BERT E. GROVE
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MUSEUM STORIES



CHICAGO
NATURAL
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WATERFALLS

Waterfalls are famous for many different reasons; some for height, some for beauty, and some for volume of water. Those that have all these features combined, though in varying degrees, are regarded as really great falls. Three waterfalls in the world are entitled to be so classified: Niagara Falls in North America,

Iguazu Falls in South America and Victoria Falls in South Africa.



Bridal Veil Falls, Yosemite National Park, California; 620 feet high

Perhaps best known of all waterfalls is Niagara, in the Niagara River, connecting link between Lakes Erie and Ontario. Niagara Falls is really two falls—the American Fall (167 feet high) and the Horseshoe or Canadian Fall (158 feet high). Goat Island lies between the two falls. Of the 15,000,000 cubic feet of water passing over the precipice every minute of day and night, only 6 per cent of the water is diverted to the American Fall; the remaining 94 per cent goes over the Canadian Fall. The ceaseless roar of the water as it plunges to the rocks below explains the name Niagara (“Thunder of Waters”) given by the Iroquois Indians.

The Niagara River, the principal drainage outlet of the four upper Great Lakes, is of great value as a source of hydro-electric power. It furnishes power for the many important industries around the city of Niagara Falls, New York, and its energy is transmitted as far as 200 miles to other cities. The use of Niagara as a source of waterpower is not recent, for the French in 1725 erected a saw mill on the New York bank of the river near the rapids. By treaty between the United States and Canada the amount of water that may be diverted for power is limited to

20,000 cubic feet per second from the American side and to 36,000 cubic feet per second from the Canadian side.

Niagara Falls is receding constantly, as the waters of the river wear back the rocks over which they flow. The yearly rate of recession of the Canadian Fall is from 4 to 6 feet; of the American Fall, from 2 to 7 inches.

In Rhodesia, at a point where the Zambezi River passes from the central African plateau to lower levels, is the mightiest of all waterfalls—Victoria Falls. These falls were discovered in 1855 by Dr. David Livingstone, a famous Scotch explorer, who named them after Victoria, England's Queen. The native African name for the falls is *Musi-oo-tunya* ("Thundering Smoke") and the roar of the water can be heard for twenty or thirty miles. The height of Victoria Falls (400 feet) is more than twice that of Niagara, and the total breadth is considerably more than a mile.

One of the highest bridges in the world, with a span of 650 feet, crosses the gorge a quarter of a mile below Victoria Falls. Prior to the building of the Cape to Cairo railroad in 1905, the falls were almost inaccessible to casual visitors, but today a spacious hotel has been built on the spot for the accommodation of visitors and the railroad crosses the canyon so close to the falls that passengers are wet with the spray. The land adjoining the falls is now a public park.

The Iguazu Falls of South America, located where Brazil, Argentina and Paraguay meet, is also higher than Niagara Falls, having a height of 230 feet; Iguazu Falls is two miles wide, twice as wide as Niagara. Of the three—Niagara, Victoria and Iguazu—the Iguazu Falls carries the smallest volume of water. Until recently, owing to the inaccessibility of this region of South America, the falls were known only to daring travelers, but now the Argentine government has recognized the importance of the falls and regular excursions take many tourists by train and boat from Buenos Aires and other cities to Iguazu. The approach to the falls is heralded by their thunder, which may be heard many miles away. Midstream on the lip of the falls precipice is the island of San Martin, corresponding to Goat Island at Niagara.

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HOW ANIMALS ARE MOUNTED IN A MUSEUM

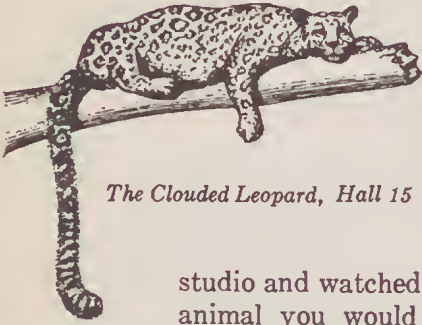
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HOW ANIMALS ARE MOUNTED IN A MUSEUM



The Clouded Leopard, Hall 15

One of the interesting places in a museum is the taxidermy studio, where the animals are mounted. Many people still think that animals are stuffed and they ask to go behind the scenes to see how this is done.

If you stayed in the taxidermy studio and watched all the stages in the mounting of an animal you would have to stay around for several months or a year and you might be greatly surprised at the many details in the processes of making animals look alive. These various processes are called taxidermy, which means approximately "skin art."

Various taxidermists use different methods, depending on the size of the animal and possibly on the condition of the skin. Only one method can be explained here. Let us take one animal and follow through all the processes necessary to make him look natural in a museum case; for instance, take the leopard shown in the illustration. This animal lived in India, where an expedition of museum men had gone hunting. They were interested in collecting different kinds of animals and so they studied the region and the animals that lived there, being very careful to make notes on their surroundings and habits. The men often took pictures and made sketches of the plants and trees. After the leopard had been killed, about fifty different measurements of the body were taken. The skin was removed, cleaned, and salted; the bones were also cleaned. Then bones and skin were shipped back to the museum where the skin was tanned and hung in the skin room. Skins can remain there in good condition for many years either as study specimens or until they are needed for mounting.

In the meantime the taxidermist was planning the posture for the mounted leopard. It had to represent an action typical of this animal; for instance, a leopard would not ever be swinging by its tail; it might be creeping along the ground, it might be resting on a branch as you see it here, or it might be engaged in some other activity. This meant that the taxidermist must be familiar with the habits of the animal as well as the structure of its body. Often the taxidermist collects the animal and thus has first-hand information concerning its habits; he

also makes use of the photographs, notes, and measurements that have been taken. Often he makes a miniature clay animal modeled in the desired posture. Our leopard was modeled in miniature, true to scale, resting on a tree branch, as the illustration shows.

Now, working from the miniature model, the taxidermist wired the leopard's skeleton together in the same posture. He then modeled clay on the skeleton and built up a clay animal whose body measurements were exactly the same as those of the leopard; the animal seemed almost to come to life in clay. It is evident that a taxidermist must be an artist. The skin was tried on this clay animal once in a while just to make sure that the body was being modeled correctly.

When the clay animal had been completed, a mixture of wet plaster of paris and fibers was smeared all over the body; this dried into a hard plaster mold, which was removed in sections. Now into each section of the mold a layer of burlap was glued; it was carefully pushed into all the contours of the mold. Then this burlap was reinforced with three or four more layers of burlap that had been dipped into a wet plaster of paris composition. When these layers were dry, the plaster mold was soaked and the burlap structure came out in sections. The sections were fitted together to form a hollow artificial body exactly the same in measurements and posture as the original clay model of the leopard. This artificial body is called a manikin.

Now the leopard's skin was moistened, relaxed, and cemented on the manikin. It fit perfectly and smoothly. Glass eyes were set in and eyelids were carefully arranged to create individual expression. There were many final touches, such as brushing the fur in place, and retouching with wax and paint any faded parts on the skin, lips, or nose. Last of all the leopard was fastened on a branch of a tree and placed in the museum case. There it remains as a representation of the animal's appearance in life. It is not stuffed; it is an accurately and artistically mounted animal.

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